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Spacecraft Fire Detection and Extinguishment: A Bibliography

Nora H. Jason

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National Bureau of Standards
National Engineering Laboratory
Center for Fire Research
Gaithersburg, MD 20899

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Prepared for
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Lewis Research Center
Cleveland, Ohio

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**U.S. DEPARTMENT OF COMMERCE, C. William Verity, *Secretary*
NATIONAL BUREAU OF STANDARDS, Ernest Ambler, *Director***

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Abstract

Pertinent fire detection and extinguishment references have been identified to further the knowledge of spacecraft fire safety. To broaden the scope of the bibliography, other unusual environments, e.g., aircraft, submarine, ship, have been included. In addition, for a more comprehensive view of the spacecraft fire safety problem, selected subjects are included, e.g., materials flammability, smoke, human behavior. The references will provide the research worker with access to state-of-the-art works and to historic works. Selected references from the 1960s have been included, but the emphasis is on references published from 1975 to 1987. The references are arranged by very broad categories. Often a paper will cover more than one topic, but for the purposes of this bibliography it will be cited only once.

1. Introduction

A NASA Lewis Spacecraft Fire Safety Workshop, held in Cleveland, Ohio, on August 20 and 21, 1986, reviewed the state of the art and assessed the needs for spacecraft fire safety. In addition, one of the suggestions was to develop bibliographic resources to aid an on-going study on fire safety technology development experiments for the Space Station.

This bibliography is an outgrowth of that Workshop. It is a compilation of references to assist the researcher in resolving the problem of fire detection and extinguishment in a spacecraft environment and other environments that might be related to it. To develop a more comprehensive view of the spacecraft fire safety problem, additional subjects are included, e.g., materials flammability, smoke, human behavior. As these subjects are interrelated, references will be cited in the most appropriate category although they may ideally be cited on several categories. Cited references are from the 1960s, but the emphasis is on works published from 1975 to 1987.

The following automated bibliographic databases were searched, using a broad array of keywords to include not only the spacecraft environment, but other unusual environments, e.g., submarines, aircraft, ships, to identify potential references for this bibliography. In turn, references cited within the selected references were reviewed. When appropriate, these references also were included. Center for Fire Research (CFR) experts made valuable contributions, as well as several other experts in the fire research field. The combination of machine and human input data made this bibliography a reality.

The databases queried on Dialog Information Services, Inc. were:

Aerospace
Chemical Abstracts
Engineering Index
Ei Engineering Meetings
Inspec
National Technical Information Service
Textile Technology Digest
World Textiles

Other data systems queried were:

Defense Technical Information Service
FIREDOC (a National Bureau of Standards fire research database)
NASA/RECON

Pertinent references were incorporated into the FIREDOC database. Each record contains the full bibliographic reference, keywords, and abstract. To assist the user, in-depth indexing was instituted to compensate for short abstracts. An identifier was assigned to each record for the purpose of developing the bibliography and it corresponds to those sections noted in the Table of Contents. The identifiers are intentionally broad, e.g., Microgravity and Zero Gravity, Extinguishing Agents. Each reference only appears once in the bibliography, in the most appropriate identifier category. However, to access a reference in FIREDOC any combination of keywords and/or identifiers may be used.

FIREDOC is the automated database of the National Bureau of Standards, Fire Research Information Services (FRIS) bibliographic collection. The collection, started in 1971, reflects the programmatic interests of the CFR. It contains national and international fire research reports, books, journal articles and conference proceedings. FIREDOC contains the complete bibliographic reference (e.g., author, title, corporate source, journal name, volume number, pagination, date of publication) and, if appropriate, abstract, keyword(s) and identifier(s). The full text of the document is not included in the database. FIREDOC is growing daily; it currently contains information on 9000 of the 30,000 documents in the FRIS collection. Documents added to the FRIS collection since 1983 are included, as well as some older CFR documents. If you are interested in accessing FIREDOC, please contact Nora H. Jason; the telephone number is (301)975-6862 during normal work hours, Eastern Time.

U. S. Government reports. e.g., NASA CP-2476, may be purchased directly from the National Technical Information Service, Port Royal Road, Springfield, VA 22161. Conference proceedings, if not published in a U. S. Government report series, may be obtain from the sponsoring organization. Complete citations are provided for the journal articles and they may be obtained from the journal, the author, or a library.

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16. Abstract Pertinent fire detection and extinguishment references have been identified to further the knowledge of spacecraft fire safety. To broaden the scope of the bibliography, other unusual environments, e.g., aircraft, submarine, ship, have been included. In addition, for a more comprehensive view of the spacecraft fire safety problem, selected subjects are included, e.g., materials flammability, smoke, human behavior. The references will provide the researcher with access to state-of-the-art works and historic works. Selected references from the 1960s have been included, but the emphasis is on references published from 1975 to 1987. The references are arranged by very broad categories. Often a paper will cover more than one topic, but for the purposes of this bibliography it will be cited only once.			
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